WAIS Inc

Wide Area Information Servers

"Corporate Memory" Sharing Through A WAIS System

In a highly distributed corporation, a Wide Area Information Servers (WAIS) system was installed and its usage was monitored over a period of two months. This set of software tools - that allows information retrieval from distributed sources via an easy-to-use interface - proved very useful in the distribution of important information dispersed throughout the company.The pilot groups that were monitored,guided the installation of the software towards exploiting sources (databases) which well represented the "corporate memory". The sharing of this information enhanced the timeliness of decisions,improved the quality of customers contacts and reduced production and distribution time of information materials needed throughout the corporation.

WAIS -the Wide Area Information Servers system - is an electronic publishing software set which allows search and retrieval of multimedia information from distributed databases. It has been specifically designed for non specialized users. Information can be drawn from data stored on the end user desktop, from computers distributed throughout an organization on a local area network or from information sources on public networks.

In July of 1992 an enhanced version of the WAIS UNIX server and Macintosh client software was acquired by a medium size United States corporation in the business of systems integration and facilities management for installation throughout the company.

This paper reports about the preparation and the first two month of tuning and testing of the installation. Data collected during this period suggest that this tool enhances the sharing of information amongst distributed teams and provides access to otherwise dispersed and poorly utilized sources of information which together form the "corporate memory" of an organization. The sharing of external

and internal sources of information, including memos, customers data, contracts and status reports, enhanced cooperation throughout the organization and proved to increase productivity and efficiency.
WAIS approach towards information retrieval

WAIS was originally developed by Thinking Machines Corporation of Cambridge, Massachusetts in collaboration with Apple Computer, Inc., Dow Jones & Company, and KPMG Peat Marwick. Since April of 1991 a freeware version for workstations and personal computers was made available on the Internet. With over 300 databases and 15,000 users worldwide, WAIS is rapidly becoming a standard for information distribution within the Internet environment.The software currently available includes user interfaces for most platforms and server software that provides automatic indexing of databases.

WAIS is designed to provide easy access to personal, corporate and public information. The information is accessible regardless of format: text, formatted documents, pictures, spreadsheets, graphics, sound, or video. Search and retrieval of relevant information is made using a natural language question. Results are presented by headline in ranked order.The most relevant responses, regardless of size, can be sent back to the server in their entirety to further refine a search (telling the server, "Find me more like this document").The retrieval process is based on a search method called "relevance feedback".Important searches can be automatically repeated at selected intervals, monitoring and alerting to new information as it becomes available. WAIS uses a standard computer-to-computer protocol (NISO Z39.50) based on a client-server architecture. Each WAIS server receives a question, searches the full text of the database for the most relevant documents, and ranks the results using automatic word weighting.

An important feature of WAIS is the possibility of indexing repositories of information in many formats which are scattered on employees machines. Within a corporation, for example, it is possible to index even small databases of formatted documents and make them available automatically to other users. Procedures can be established so that the control over the content of the different sources remains in the hands of the owner/producer of the information. Access can be limited to one person or more based on

various considerations. In this way information stored in electronic form can be very easily made accessible to an entire corporation, without need of reentering the data in a central, customized database.

Corporate installation

The corporation installing the enhanced version of the WAIS system is a medium size company in the business of systems integration and facilities management. It is a highly distributed corporation, with more than 1000 employees and 15 offices spread over the United States and others abroad. Being in the business of facilities management, many employees are located at customers' sites which serve as company offices for the purposes of this discussion. The main facilities that are managed by the corporation are data centers of banks, insurance companies, etc.

The culture of the company is very much based on a centralized model of information systems although the strategic plan is to move towards distributed and network computing. This was the principal reason why the corporation was interested in testing in house, before proposing it to its customers, the introduction of an information sharing tool such as the WAIS system. The goal, as stated by the top management board, was "to become a showcase for our customers in using client-server software tools for information sharing".

The responsibility of the three person WAIS installation team (1) was twofold: to train employees in the use and administration of the WAIS system and to be a factor of cultural change for the organization.

Information needs assessment

The information needs assessment process consisted of a series of 25 interviews with the goal of identifying the major functions or teams to be part of the initial pilot groups and the WAIS sources of interest. Users were asked to keep an information log book listing all the sources of information (formal or informal) used during the work day. This methodology allows people to become aware of their information needs. These log books were subsequently used during interviews to identify functionality needs and information sources.

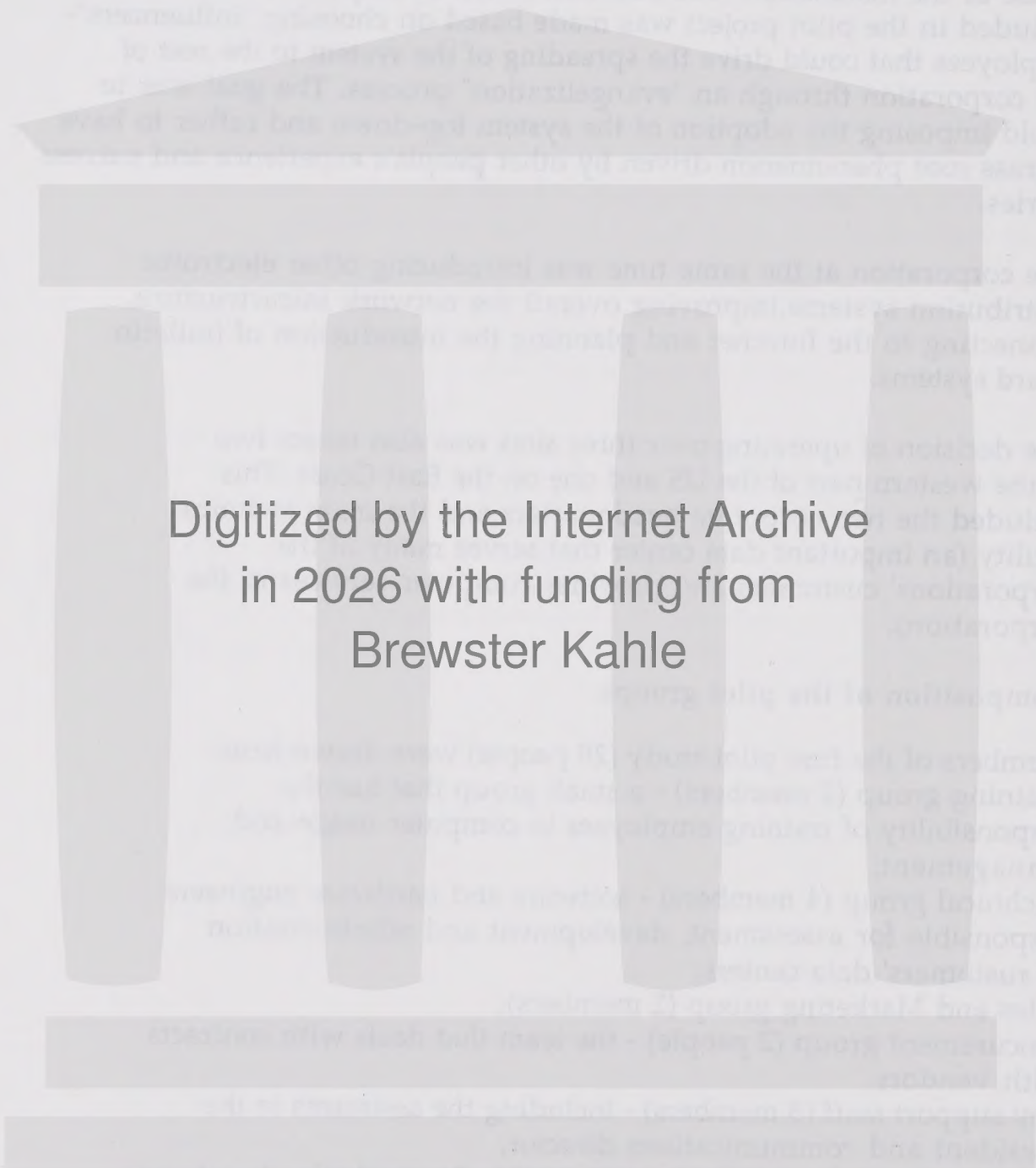
A presentation of the WAIS system, the goals of the installation and the results of the interviews was then given to the interviewees.These discussions allowed the final tuning of the choices made for the initial phase of the installation. The selection of which employees were to be included in the pilot project was made based on choosing "influencers"- employees that could drive the spreading of the system to the rest of the corporation through an "evangelization" process. The goal was to avoid imposing the adoption of the system top-down and rather to have a grass root phenomenon driven by other people's experience and success stories.

The corporation at the same time was introducing other electronic distribution systems,improving overall the network infrastructure, connecting to the Internet and planning the introduction of bulletin board systems.

The decision of operating over three sites was also taken: two in the western part of the US and one on the East Coast. This included the two corporate headquarters and the main technical facility (an important data center that serves many of the corporations' customers and provides computer services to the corporation).

Composition of the pilot groups.

Members of the first pilot study (20 people) were drawn from:
Training group (2 members) - a small group that has the responsibility of training employees in computer usage and management;
Technical group (4 members) - software and hardware engineers responsible for assessment, development and administration of customers' data centers;
Sales and Marketing group (2 members);
Procurement group (2 people) - the team that deals with contracts with vendors;
Key support staff (3 members) - including the assistants to the president and communications director;
Graphics group (2 members) - responsible for marketing brochures, and other multimedia materials;
WAIS team (4 people) - the technical support of the WAIS system.



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https://archive.org/details/corporatememorys00unse_0

These 6 groups (all of the above except for the WAIS team) were chosen for being key groups which perform a centralized function for the corporation . They were also selected because they had all expressed various degrees of difficulty in making efficient their function in a widely distributed company.

The first pilot team was trained in a two hour session repeated at the three different sites and was monitored for one month. The second pilot group was then added, after training. The composition of the second pilot group consisted of 30 more employees and reproduced the structure of the first pilot group in subgroup composition.Improvements to the software and the WAIS sources were made available and the two groups were monitored separately over a period of another month.

The strategy adopted for the coordination of the pilot groups was to use electronic mail for any kind of communication between the members of the group and the WAIS team. This allowed some progress in the enhancement of electronic mail usage as a preferred communications for coordinating distributed teams.

Bulletin boards were not yet available but mailing groups were used and people were encouraged to send messages to the entire pilot group and not just on a one-on-one basis. After a week of shyness in sending messages to the entire mailing group, people adapted to the new communication medium and gave positive feedback about it. Mailing groups soon arose for other common tasks not associated with WAIS.

Information sharing and WAIS sources choices

Adopting the philosophy on which the WAIS system is based of making all sources accessible via a uniform easy-to-use interface, it was decided to have a mixture of public information sources and sources specific to the corporation.
Two main categories were taken into consideration:
A) External sources.
B) Internal sources.

A) External sources.
Published information on computer industry of general interest for the corporation employees and reference information was indexed

and divided into the following separate sources:
1) Information on microcomputer products
2) Information on mainframe products
3) Information on corporations
4) Information on communications products
5) Information on software products
6) Information on hardware products
7) Information on computer industry companies
8) Collection of trade magazines articles
9) Glossary of computer terms
10) Directory of Servers
The Directory of Servers is a directory of all the different WAIS servers available on the Internet. It allows users to find sources of interest and to then access them. The WAIS Internet system at the time of the installation was composed of approximately 300 databases. Examples of interesting sources for the corporation in which the installation was taking place are various Frequently Asked Questions (FAQ) sources. These servers collect electronic mail exchanges of various mailing lists, specialized by product or area. For example the FAQ source for the Macintosh collects several months of discussion on the Macintosh mailing list about technical software and hardware support issues. By quering this server, system administration employees have easily available a help line where they can find in many instances answers to their technical problems.

B) Internal sources
Some of these sources can be classified as "corporate memory" sources. These are repositories of information which are distributed throughout a corporation and that contain relevant information about past activity.
1) Contracts
This source was created to include some of the corporations contracts, to be used specifically by the sales and marketing group.
2), 3)Training materials (two separate sources)
The specially developed training materials could be distributed online. The WAIS source in this case was composed of formatted documents with images and tables included in Microsoft Word.The source included also a free text version of the training materials so that all the employees that did not have the Microsoft Word software could access online the text of the training materials.
4) Corporate announcements
5) House organs and internal newsletters

6) Account profiles
For use by the sales and marketing groups, this source included a description and various information on the different accounts. Contact people, type of contracts and other information collected by various sales and sales support people was made accessible via this source.
7) Phone Book
The corporate phone directory could be accessed on-line through the WAIS system, without having to change format or need of special software.
8) Employee data
Non-confidential data about employees were made available through this source.
9)Resumes
The resumes of employees were included in this database. An important source for the corporation, that often has to switch around employees at customers' sites, for tasks that many times are new. This allowed managers of different accounts to be able to identify employees with the appropriate skills in a short time.
10) Corporate policies
A collection of the corporate policies for employees.
11) Presentations
A collection of overheads of presentations.
12) WAIS documentation
A collection of documents about WAIS and of training manuals for the system.
13) Directory of the internal sources

Goals of the trial installation and discussion of results.

Since external sources of information were more likely to be of interest to inexperienced employees, the first goal was to use published information databases as a easy metaphor for on-line information retrieval. This turned out to be a right assumption. From the logs of the users it was possible to see how usage in both groups was triggered mainly by these external sources during the first week, but gradually switched to internal sources and reached a balance after a week or two of usage. This happened despite the fact that during the pilot groups phase the quality of the external sources was better than the quality of the internal sources. Internal sources were not automatically updated during the trial period and therefore were out of date by the end of the pilot group experience. As could be expected external sources, according to interviews with the users,

became rapidly integrated in the usual working habits. Twenty-five users reported being well informed when dealing with a vendor or a customer, able to consult the online databases while on the phone with a vendor, and able to put together materials for their manager. At the end of the trial period the groups agreed that they wanted to see more information sources added to the WAIS system.

A second goal of the pilot study was to test cooperative work possibilities deriving from the use of the system and to see if information sharing throughout the company increased the usage and utility of "corporate memory" archives.

An example case concerned the Contracts and Account Profiles sources that were made available to the sales and marketing subgroups. Their usage was very high despite the fact that the sources included only a couple of dozen items, The sales and marketing subgroup reported success stories in saving time with finding an example contract without having to call the previous sales person assigned to an account. The people involved in the support group for sales and marketing are now coordinating the collection of materials from different personal databases and collections of memos for indexing in the WAIS system.

The Presentation source was another interesting case. The graphics group performs a centralized function of coordinating the materials used for presentations. The graphics group has an advanced production system and works in color, producing overheads in house. The group uses software which is not widely available in the corporation. The electronic files are very large and require in many cases more than one hour to be transmitted over the network. The solution in most cases is to mail the materials in hard copy, often overnight with high costs involved. The group was looking for a way to have people scan through the images online and be able to select and order from the graphics group reproductions of the overheads needed. Using a runtime version of the presentation software it was possible to make the presentation files searchable through WAIS and viewable in a compressed form. The head of the group, participating in the WAIS pilot group calculated a production time saving for each viewing of 4 to 5 hours.

Another interesting case of successful sources for the pilot groups concerned the Corporate Announcements and Newsletter sources which were the two main internal communications information sources. The pilot group

members explained at the end of the two testing periods that they had never thought of going back to these sources when they only had them available in hard copy. The possibility of searching rapidly for an announcement they remembered seeing at some point motivated them to look up the information.

The feedback from the pilot groups trials yielded additional ideas about other distributed sources to be added to the list for future usage such as status report collections and memos collections. The mailing list archives of the pilot groups discussion were also proposed as sources of information for future users of the WAIS system.

Conclusions:

The testing of different categories of information sources, varying in origin, in format, and in quality, was a useful experience for the product developers and the customer of the enhanced WAIS system. This program showed how, through an easy-to-use, distributed information retrieval systems it is possible - in a short period of time - to change work habits, increase group coordination, and enhance involvement of employees in information distribution. Such a system creates a collaborative, sharing environment in which employees, motivated to improve the quality of their job, may enhance their productivity in information-related tasks. Particularly interesting to the author was the possibility of bringing alive and making highly usable repositories of information which constitute the "corporate memory" of a specific company. Through an electronic distribution tool this information can be made accessible for usage in new ways and in a shorter time frame than through person-to-person communication from old to new employee. This possibility seems to be particularly useful in corporations similar to the one here discussed - highly distributed and one in which employees tend to be frequently re-assigned from one function to another one, from one location to another one and from one customer to another. The capability of keeping track of the evolution of an account, the know-how of employees, in essence the history of the different jobs by making accessible information captured in electronic form, is a real improvement in the training and quality of the employees skills and enhances in our opinion the flexibility of today's knowledge worker.